

REMARKS

Claims 1-3, 5-12, 14-19 and 36-43 are pending in the subject application. No claims have been indicated to be allowable.

RE-NUMBERED CLAIMS

Applicants acknowledge the re-numbering of claim 32-37 to read as claims 36-41, respectively. The present amendment changes the dependency of re-numbered claims 36-41 to depend from the proper claims as re-numbered.

35 USC 103

Claims 1-3, 5, 7, 8, 10, 28-31 and 36-38 stand rejected under 35 USC 103(a) as being unpatentable over Beck et al. (4,588,702) in view of Kugler (4,944,864). This rejection respectfully is traversed.

Beck et al. discloses a process for cracking a hydrocarbon feed containing sulfur in the presence of a catalyst containing zeolite, clay and silica alumina gel. Beck et al. fail to teach or in any way suggest the use of a vanadium-containing sulfur reduction additive as claimed by Applicants in the presence of an equilibrium cracking catalyst to reduce the sulfur content of **liquid** petroleum cracked products obtained from a catalytic cracking process.

Further, Kugler fails to cure the deficiencies of the Beck et al. reference so as to render obvious Applicants' invention as now claimed. Kugler discloses a process for removing vanadium and/or nickel contaminants from a cracking catalyst using a strontium carbonate-trapping agent. Kugler in effect **teaches away** from Applicants' invention by teaching **removing** vanadium from an equilibrium catalytic cracking catalyst during a catalytic cracking process. On the other hand, Applicants' invention teaches the use of a vanadium-containing sulfur reduction additive to **add or increase** the amount of vanadium on the equilibrium catalyst to accomplish a reduction of sulfur in the **liquid products** produced in a catalytic cracking process.

Consequently, neither Beck et al. nor Kugler, alone or in combination, renders Applicants' invention as now claimed unpatentable as being obvious. Accordingly, this rejection is improper and should now be withdrawn.

Claims 9 and 39 stand rejected under 35 USC 103(a) as being unpatentable over Beck et al (4,588,702) in view of Kugler (4,944,864) and further in view of Cooper et al. (5,601,798). This rejection is also traversed.

For reasons as stated hereinabove, neither of the Beck et al. nor the Kugler references, alone or in combination, renders Applicants' invention unpatentable. The Cooper et al. reference fails to cure the deficiencies of the Beck et al. and Kugler references so as to render obvious Applicants' invention as now claimed.

Cooper et al. is relied upon to illustrate that US4 has a specified unit cell size. Cooper et al. fail to in any way teach the use of a vanadium-containing sulfur reduction additive in the presence of an equilibrium catalyst to reduce the sulfur content of liquid products produced during an FCC process.

Consequently, Applicants' invention is patentable over Beck et al., Kugler or Cooper et al., alone or in combination. Therefore, this rejection is improper and should be withdrawn.

Claims 11, 12, 14 and 16-19 stand rejected under 35 USC 103 as being unpatentable over Beck et al. (4,588,702) in view of Kugler (4,944,864) and further in view of Occelli (4,615,996). This rejection is traversed.

For reasons as stated hereinabove, neither of the Kugler or Beck et al. references renders Applicants' invention, as now claimed, unpatentable. Further, the Occelli reference fails to cure the deficiencies of the Beck et al. and Kugler references so as to render Applicants' invention obvious.

Occelli is relied upon for the teaching that it is conventional to use catalyst having Applicants' claimed particle size in an FCC process. However, Occelli fails to teach or in any way suggest the use of a vanadium-containing sulfur reduction additive in the presence of an equilibrium catalyst to reduce the sulfur content of liquid products produced during an FCC process.

Consequently, Applicants' invention is patentable over Beck et al., Kugler or Occelli, alone or in combination. Therefore, this rejection is improper and should be withdrawn.

Claims 15 and 40-41 stand rejected under 35 USC 103(a) as being unpatentable over Beck et al. (4,588,702), Kugler (4,944,864) and Occelli (4,615,996) and further in view of Cooper et al. (5,601,798). This rejection is also traversed.

For reasons as stated hereinabove, neither of the Beck et al., Kugler, Occelli or Cooper et al. references, alone or in combination, renders obvious Applicants' invention as now claimed. Consequently, this rejection is improper and should be withdrawn.

Claims 1-3, 5-8, 10-12, 14, 16-19, 28-31 and 36-38 stand rejected under 35 USC 103(a) as being unpatentable over Balko et al. (5,965,474) in view of Schorfheide (4,690,806) and Kugler (4,944,864). This rejection is traversed.

Balko et al. discloses a zeolite-containing composition for passivating metal contaminants during the catalytic cracking of hydrocarbons. The composition is silent with respect to sulfur reduction or the use of a vanadium-containing catalyst component. Consequently, Balko et al. fail to at all teach Applicants' invention as claimed.

Further, Kugler fails to cure the deficiencies of Balko et al. so as to render Applicants' invention unpatentable. As stated earlier, Kugler discloses a process for removing vanadium and/or nickel contaminants from a cracking catalyst using a strontium carbonate-trapping agent. Thus, Kugler **teaches** away from Applicants' invention of using a vanadium-containing sulfur reduction additive to **increase** the amount of vanadium on an equilibrium cracking catalyst to reduce the amount of sulfur in liquid products produced in a catalytic cracking process.

The Schorfheide reference also fails to disclose the use of Applicants' vanadium-containing additive to reduce the sulfur contents of liquid products produced during an FCC process.

Consequently, for reasons as stated hereinabove, Applicants' invention is patentable over either of the Balko et al., Kugler or Schorfhiende references, alone or in combination. Accordingly, this rejection is improper and should be withdrawn.

Claims 9, 15 and 39-41 stand rejected under 35 USC 103(a) as being unpatentable over Balko et al. (5,965,474) in view of Schorfheide (4,690,806) and Kugler (4,944,864) and further in view of Cooper et al. (5,610,798). However, for reasons as stated hereinabove, neither of these references, when taken alone or in combination, renders Applicants' invention as claimed unpatentable. Consequently, withdrawal of this rejection is requested.

DOUBLE PATENTING

Claims 1, 2, 4, 5 and 10-14 stand provisionally rejected under the judicially created doctrine of obvious-type double patenting as being unpatentable over claims 1-3, 8-10 and 12 of co-pending Application No. 09/221,539 in view of Beck et al.

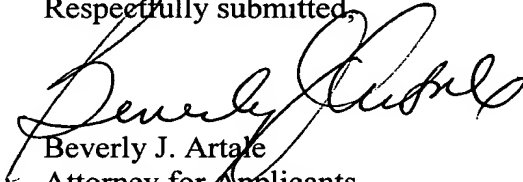
Applicants acknowledge the subject Examiner's rejection and upon the allowance of claims in either of the subject Application or co-pending Application No. 09/221,539 a Terminal Disclaimer will be filed as appropriate.

Claims 1-5 and 10-12 stands provisionally rejected under the judicially created doctrine of obvious-type double patenting as being unpatentable over claims 1-4 and 8-10 of co-pending Application No. 09/221,540 in view of Beck et al. (4,588,702).

Applicants acknowledge the subject rejection and upon the allowance of claims in either of the subject Application or co-pending Application No. 09/221,540 a Terminal Disclaimer will be filed as appropriate.

For reasons as stated hereinabove, it is believed that the Applicants' invention is patentable over the herein cited prior art references. Accordingly, allowance of Claims 1-3, 5-12, 14-19 and 36-43 is hereby requested.

Respectfully submitted,



Beverly J. Artale
Attorney for Applicants
Reg. No. 32366

Tel: (410) 531-4769
W. R. Grace & Co.-Conn.
7500 Grace Drive
Columbia, Maryland 21044